

CurveMaker v2.1 DYNAFS programmable ignition software

Dynatek
164 S Valencia St.
Glendora CA 91741
phone (626)963-1669
fax (626)963-7399

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1) Installation

Before starting, reboot your computer, and make sure any virus protection programs have been turned off. Insert the CurveMaker CD into your CD ROM drive. Open the CD in Windows Explorer. Double click on the Setup icon to begin installation.

The Setup program first checks to see if the computer has the correct Java version already installed. If it does not, the correct version is installed. Allow the Java program to be installed into the default directory.

Once this is done, there is a choice between a complete and custom installation. The custom installation allows installation of only the files needed for the ignitions you plan on programming. The complete installation installs the files for all of the ignitions.

The program will be installed to the C:\Program Files\Dynatek folder by default. Do not change this setting.

The installation program will create a Program group named "Dynatek". To find it, click the Windows Start button, then click "Programs" on the menu that appears. When you click on "Programs" another menu will appear, and "Dynatek" will be one of the choices. Click "Dynatek", and another menu will appear. This menu will contain an icon for each ignition that you specified during install. Click on the model that you want to program and the CurveMaker program will start.

Some computers may not be able to complete the setup program. If the setup program fails before or during the installation of the Java Virtual Machine, there is a second method to try. On the CD in a folder labeled contents, is a file call jre1_2_2-001-win.exe. Install this program first, then restart your machine, and run the setup program again.

2) Overview

The DynaFS programmable ignition can be programmed with four curves, which can be selected through the Curve Switch that is attached to the module. With the CurveMaker software, each of these four timing curves can be reprogrammed.

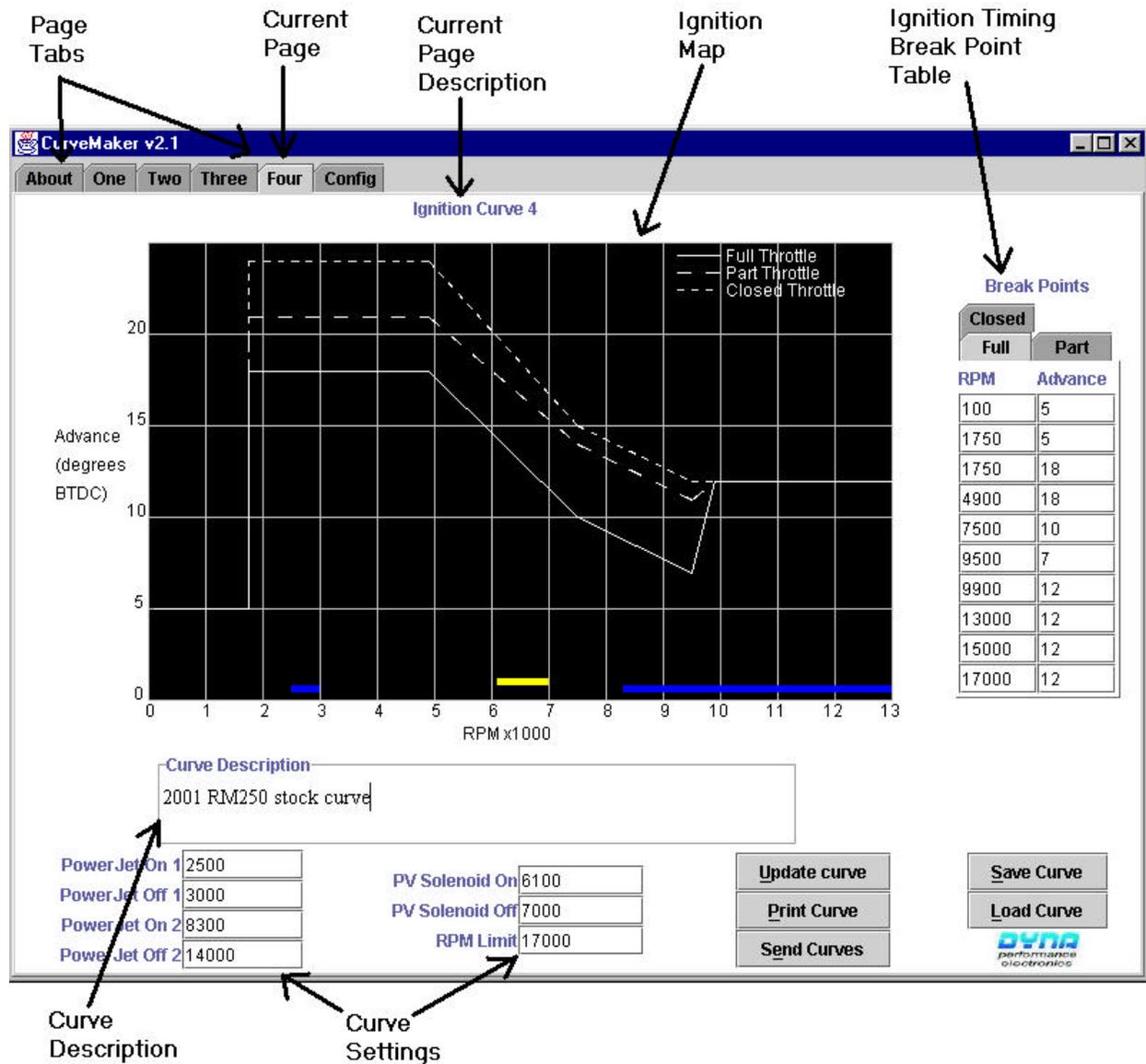
Once the ignition curves are programmed into the ignition, they can not be downloaded from the ignition. This allows tuners and race teams to make their curves, program customer ignitions with them, and still keep them proprietary.

The information for the curves is displayed on separate pages. Each page has a tab that is used to access it. There are six tabs in all:

- About, which is the title screen for the software;
- One – Four for the four separate curves; and
- Config, which has some configuration options for the software.

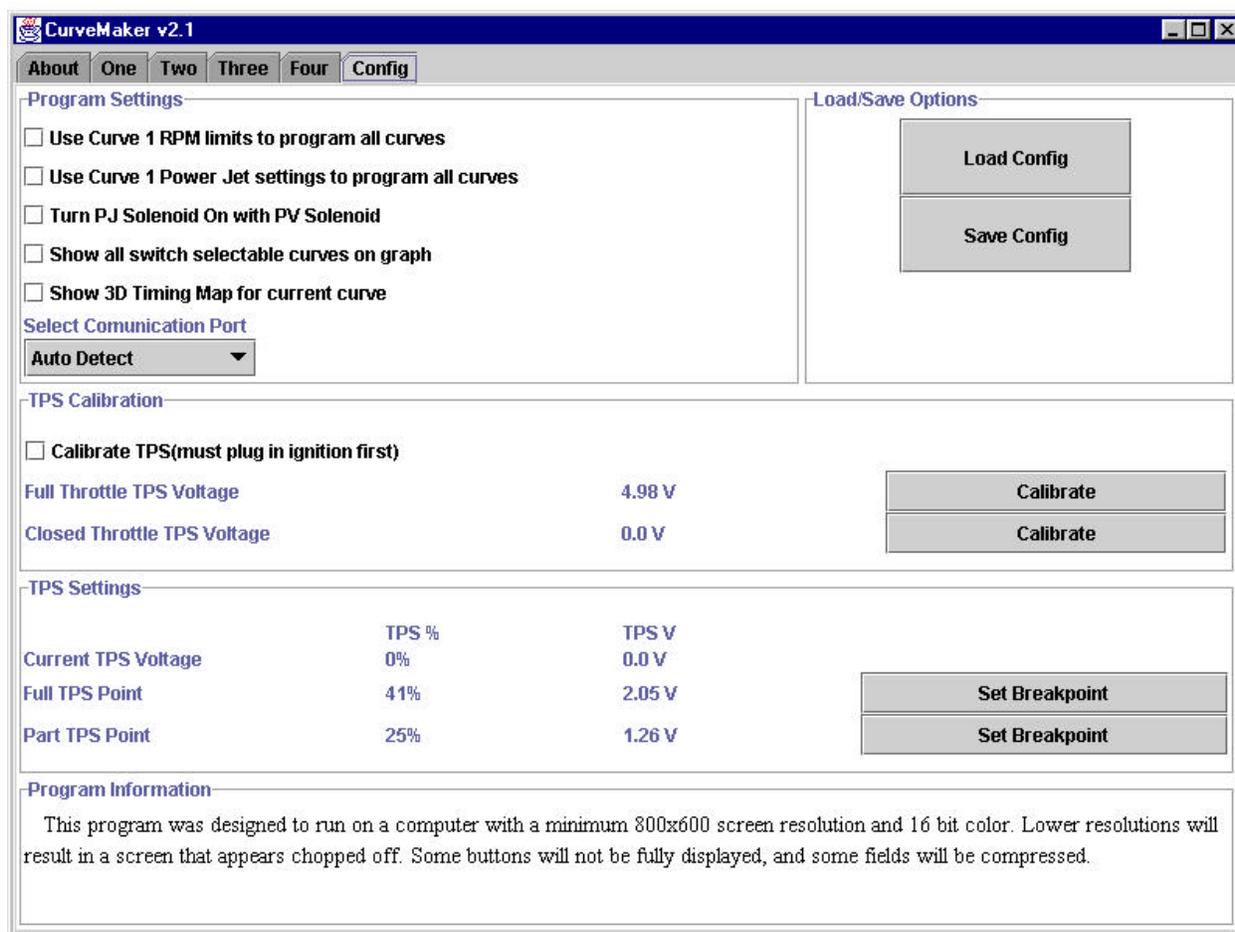
The About page displays contact information for Dynatek. This is the screen that the software displays initially.

Each of the four curve pages displays the ignition Timing Map, which is the advance curve created from the Ignition Timing Break Points that can be adjusted by the user. Each curve page also has a user editable Curve Description field. There are also settings fields to control two separate on-off ranges for the Power Jet, a separate range for the Power Valve Solenoid, and Rev Limit. All of these fields can be modified by the user. Once all of the curves are set, the ignition is programmed by pressing the Send Curves button.



The Config page displays user adjustable program settings. These settings affect how the program operates. You can select between displaying only one curve or all curves on the Timing Map, which allows comparison of the curve currently displayed to the other three curves. You can select whether or not to show the 3D Timing Map for the current curve. If selected, it will show the TPS based 3D Map for each curve. You can set the location of the serial port being used here. Or you can let the program auto detect the port for you.

For bikes equipped with a TPS, here is where you calibrate the TPS sensor. To calibrate the sensor, plug the ignition in, and check the Calibrate TPS box. Once this is done, the program may slow down, as it is communicating with the ignition. Turn the throttle fully open, hold it while pressing the Calibrate button that is next to the Full Throttle TPS Voltage. Now close the throttle and press the Calibrate button that is next to the Closed Throttle TPS Voltage. This will give you the 0% and 100% throttle values. Now you can watch the current TPS % opening, and use it to set your breakpoints for the TPS. Open the throttle until you see the desired % next to the Current TPS value, then hold it while you press the Set Breakpoint button. Hold the throttle in the same position, until you see the value updated on the screen. In the example below, the Full TPS point was set to 41%. This means that above 41% throttle opening, and the ignition will use the Full throttle curve. Between 41% and 25%, the ignition will use the Part throttle curve. And below 25%, the ignition will use the Closed throttle curve.

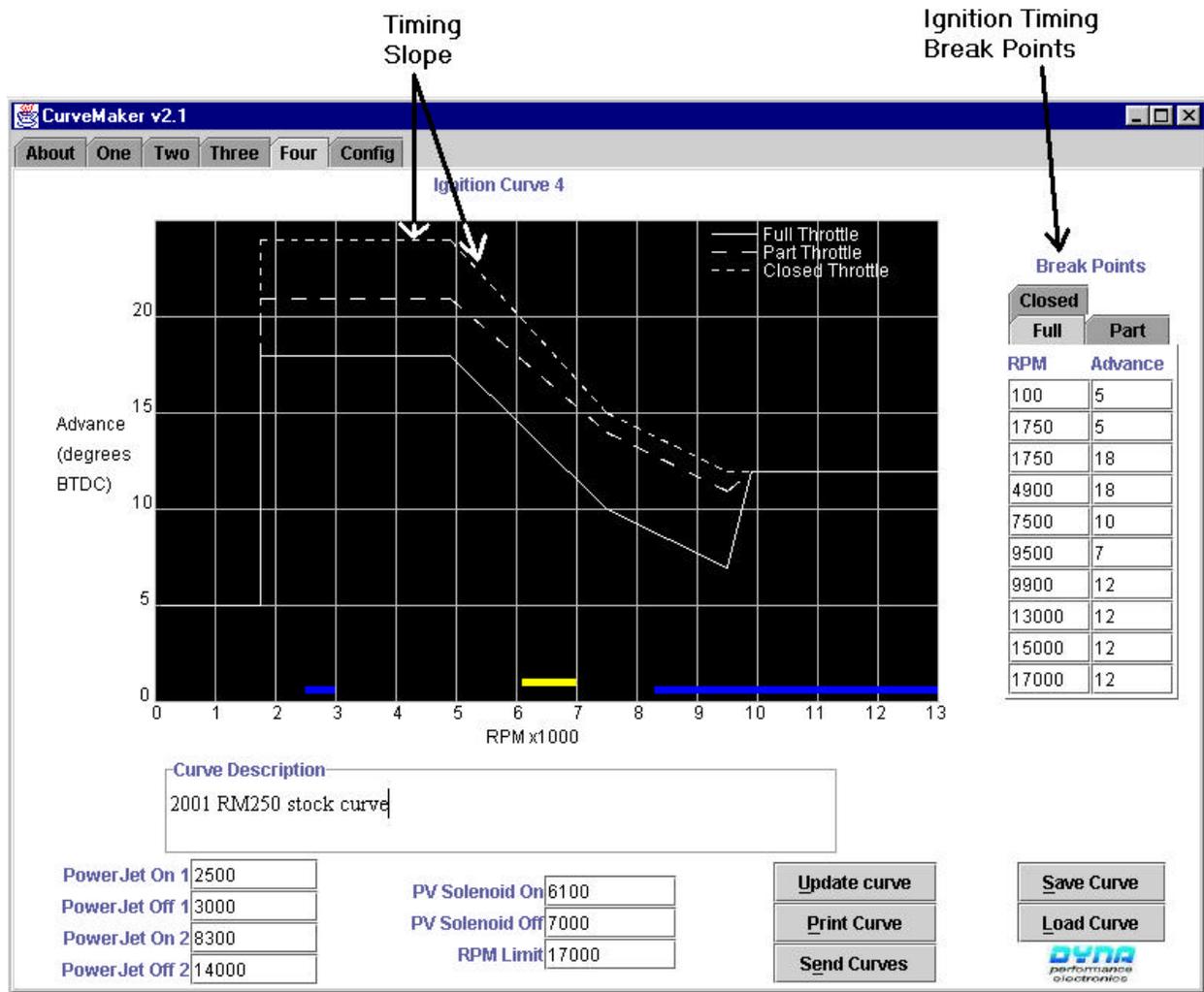


The Load and Save Config buttons allow you to save and reload all of the information that you have programmed. It will save all four curves, as well as the TPS calibration and settings information.

3) Programming a Curve

When you reprogram the ignition, it programs all of the ignition settings with all of the information from the program. So before you program it, make sure all of the curves are set up as you want them, and that all of the other settings are correct as well.

To program a timing curve, first determine which of the four curves you would like to replace. Hit the page tab for that curve to bring its information onto the screen. Each timing curve is broken up into Full, Part and Closed throttle timing curves. To select which of these 3 curves to adjust, click the tab on the right side of the screen corresponding to Full, Part, or Closed throttle. For bikes not equipped with a TPS sensor, the Full throttle timing map is the one used, so adjust the Full throttle timing curve. Each timing curve is defined by the Break Points table on the right side of the screen. Both the RPM and advance values can be adjusted. To adjust these values, use the mouse to click on the value you would like to change, then enter the new values. Advance can be done in 1 degree increments. Once the values have been changed, click the Update Curve button to show the changes on the Timing Map.



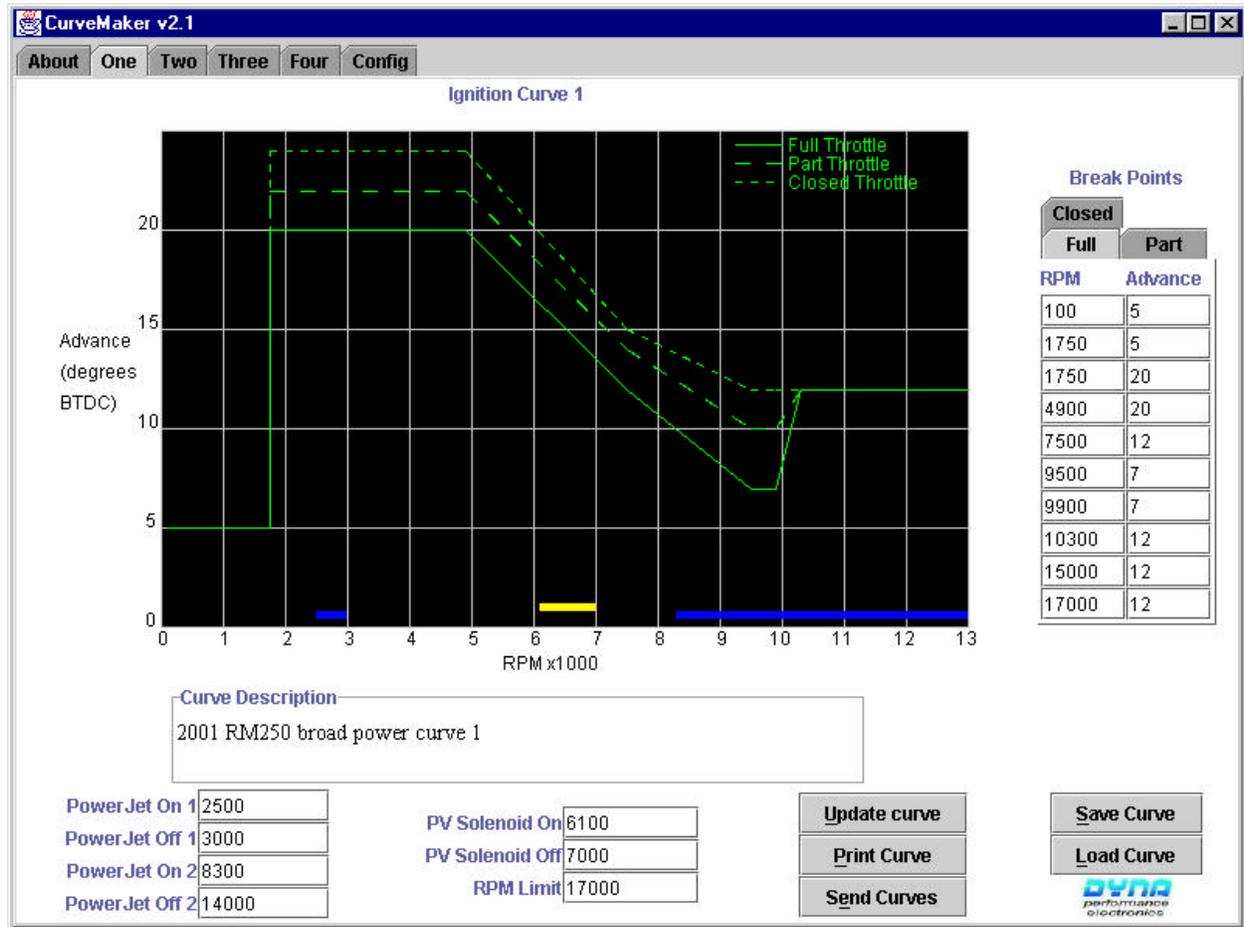
Each ignition curve is defined by timing slopes. A timing slope connects each Break Point with the next. There is not a timing slope between two points if the ignition timing is a vertical line. In the above example, the only line on the Timing map that is not a timing slope is the vertical line at 1750 rpm that goes from 5 to 18 degrees of advance. The ignition accepts a maximum of 8 timing slopes per timing curve.

For models equipped with a Power Jet, the Power Jet Solenoid On range is shown as a blue bar at the bottom of the screen. Turning the Power Jet Solenoid On turns the Power Jet off, resulting in a leaner mixture. There are two ranges that can be programmed, Power Jet 1 and Power Jet 2. This allows the Power Jet Solenoid to be turned on in 2 ranges just like stock.

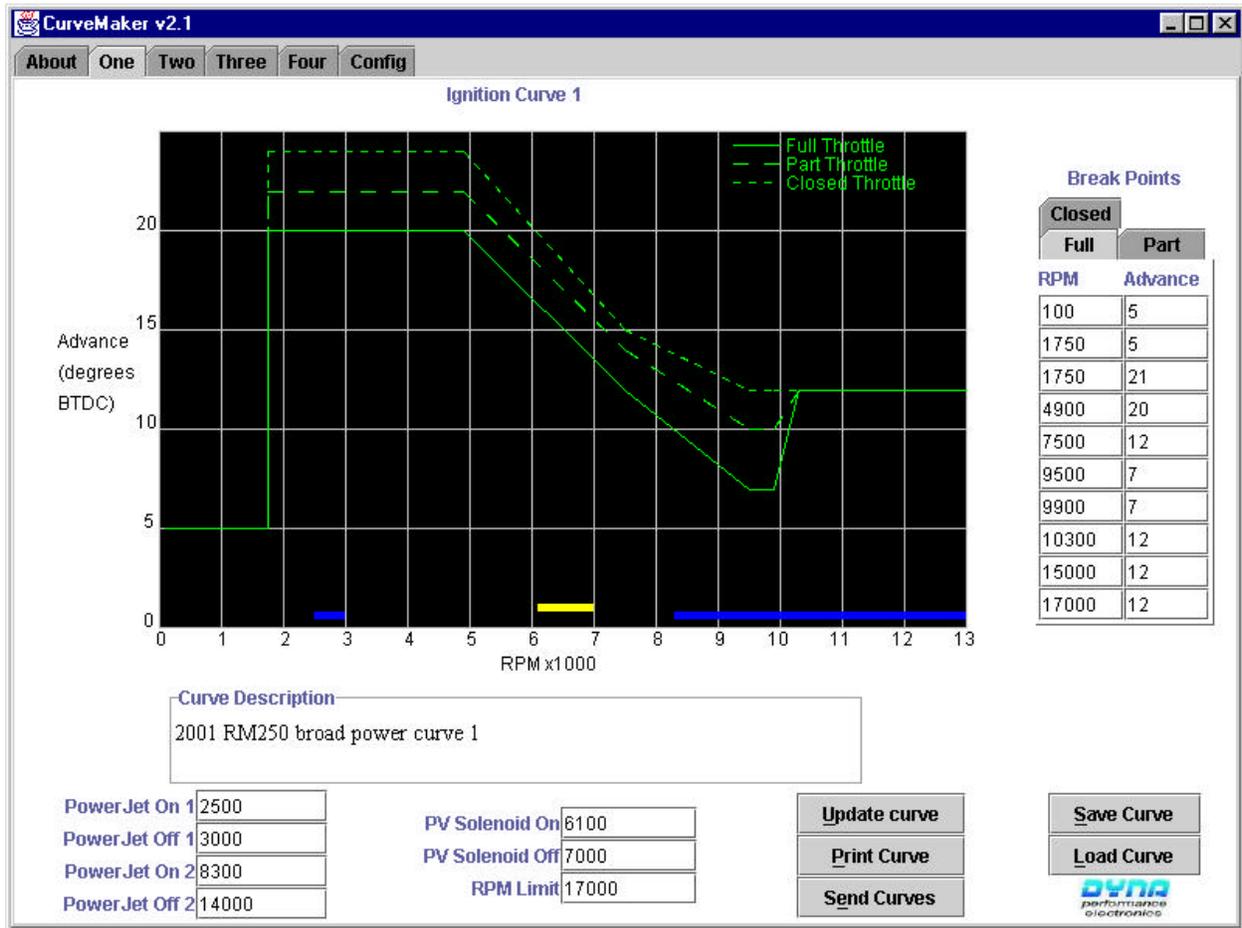
The Suzuki RM250 has an additional solenoid in the Power Valve breather. This is controlled by the PV Solenoid On/Off settings. It is displayed as a yellow bar near the bottom of the screen. The PV Solenoid controls have a single on range that can be set. This operates independently of the Power Jet controls by default. For other models, this can be set up to allow for a third On range for the Power Jet Solenoid. To set up the the Power Jet Solenoid to be controlled by the Power Valve Solenoid, go to the Config page and select the option to turn the PJ Solenoid on with the PV Solenoid.

The Rev Limit point is shown as a red vertical line on the display. If it is set above the range of the display, it will not be shown. But its value can still be read from the Settings area below the Timing Map.

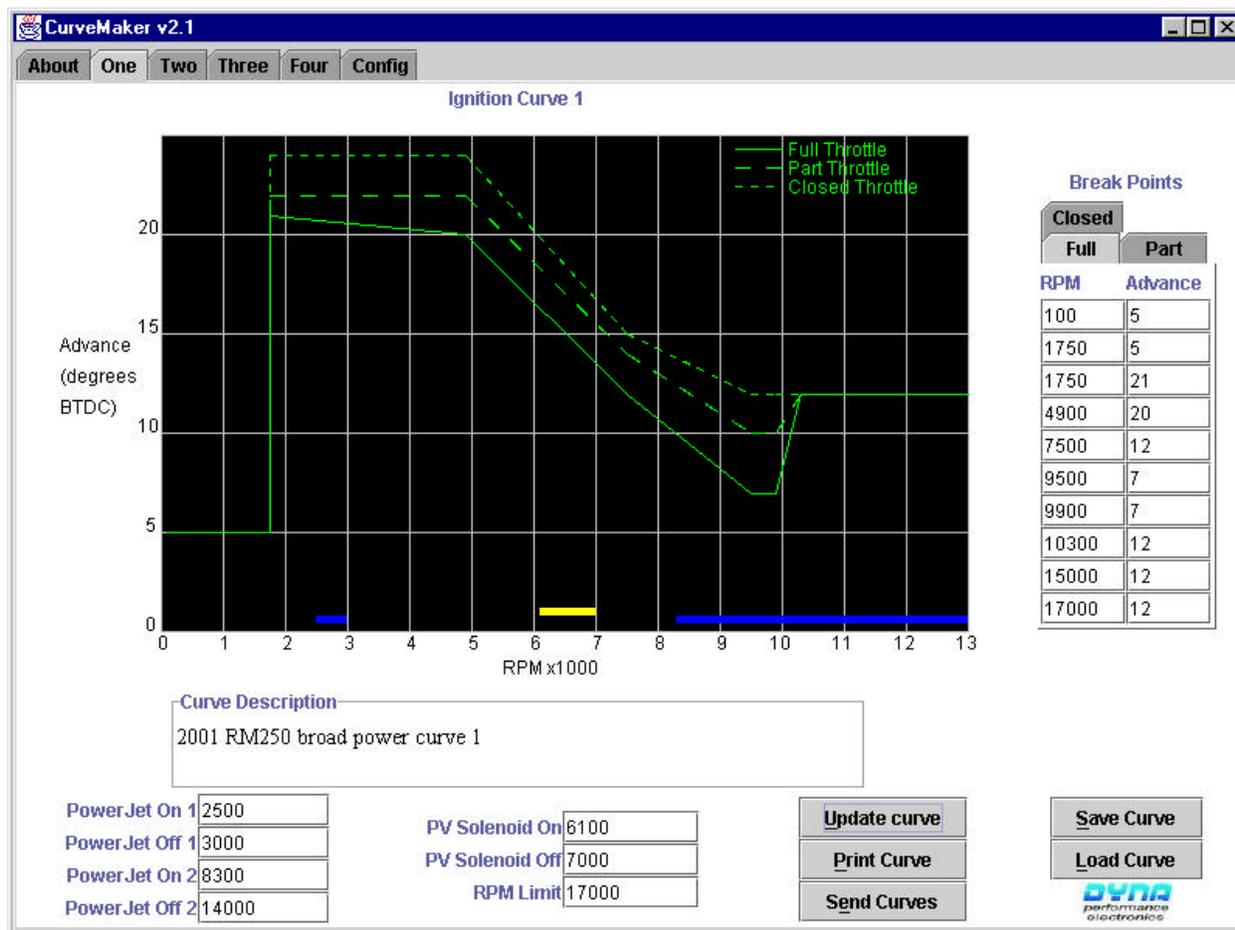
An example of programming is shown in the following screen shots. The Full throttle curve will be modified by increasing the timing 1 degree at 1750 rpm.



Select the "Full" Tab to adjust the Full throttle curve. Move the mouse over the Advance value next to 1750 RPM, and click the mouse button to edit the value. Enter the new value for the Advance.



Now the advance has been changed, but it does not show up on the Timing Map yet. To see this new change on the Timing Map, press the Update Curve button.



Now the updated curve is displayed. Programming the Part and Closed Throttle settings as well as the Power Jet, Power Valve Solenoid, and Rev Limit functions are done in the same manner.

4) Loading/Saving Curves

Curves can be stored to disk for reference later. Each curve is stored individually. Curves are stored into subfolders under the Dynatek folder. Each model of bike has its own separate folder for storing curves. To save a curve, make sure that the curve to be saved is the one currently displayed. Press the Save Curves button. A window will pop up asking what to name it, and where to save it. By default, it will save curves into separate folders for each model of bike. All curve files are labeled with a DTK extension.

Loading a file is done in the same manner as saving a file. Make sure that the curve to be overwritten is the one currently displayed. Click on the Load Curve button, then choose the curve to be loaded.

Hint: By default, CurveMaker will start with the 4 standard curves, and the user then has to load whichever custom curves are desired. To have a set of custom curves that CurveMaker loads on startup, simply name the curves "Curve 1.dtk", "Curve 2.dtk", "Curve 3.dtk", and "Curve 4.dtk". There is a space between Curve and the number. CurveMaker will then load these files on startup. If the curves being edited get hosed too severely, you can always quit the program, then restart. It will then reload the default curves, or the curves placed in "Curve1.dtk"-"Curve 4.dtk".

5) Printing Curves

To print the currently displayed curve, simply hit the Print Curve Button. The software automatically prints to the default system printer. If all 4 curves are currently displayed, then all four curves will be printed both graphically, as well as the Break Points for each curve. If the 3D timing map is displayed, each of the timing curves will be displayed, as well as the timing curve break points for each.

6) Loading/Saving Configurations

Configurations can be stored to disk for reference later. When a configuration is saved, it stores all 4 curves, as well as the sensor setup information, and model information. Configurations are stored into subfolders under the Dynatek folder. To save a configuration, go to the Config page. Press the Save Config button. A window will pop up asking what to name it, and where to save it. By default, it will save configurations into separate folders for each model of bike. All configuration files are labeled with a DCF extension.

Loading a configuration file will replace all curves currently in the program, as well as the TPS setup information, with the information stored in the saved file. To load a configuration, go to the Config page. Press the Load Config button. A window will pop up asking which configuration to load. By default, it will look in the folder for each model of bike. All configuration files are labeled with a DCF extension.

7) Programming the Ignition

Make sure that all loaded curves and settings are satisfactory before beginning the programming process. The programming process programs all curves simultaneously. The bike must not be running, and if there is an ignition switch, it should be turned off. Make sure the programming cable has the 9V battery connected properly. Connect the DB-9 end of the cable to the serial port on the back of the PC or laptop. Plug the other end of the cable into the DynaFS programming connector. In the CurveMaker software, go to any one of the Ignition Curve pages. Press the Send Curve button. After several seconds, a window will pop up stating either that the programming was successful, or that it did not work. If the programming fails, it will give you an error message. Once programming is finished, disconnect the ignition from the programming cable. This will extend the battery life of the 9V battery in the programming cable.

A “Curves Sent Successfully” message indicates that the curves were sent, verified, and programmed.

A “Programming Failure” message means that the ignition received the data properly, but was not able to store the data. Make sure that the 9V battery is still good (at least 7.5V), and the programming cable is in good shape.

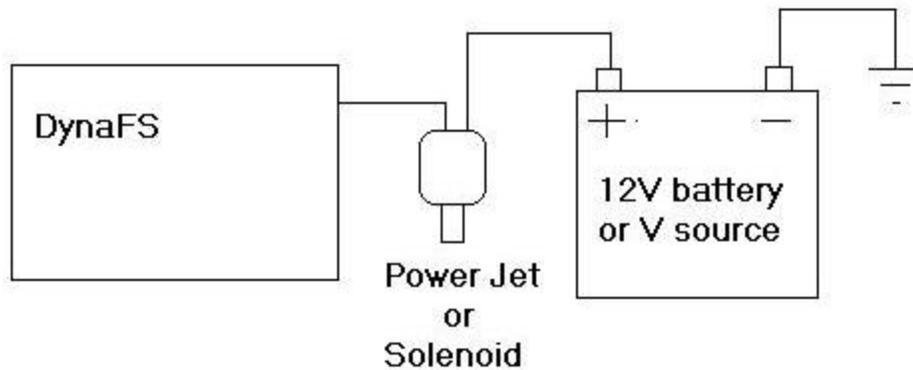
A “Communication Failure” message means that the data received by the ignition was corrupted. Check the programming cable.

A “Ignition not found” message means that the ignition was not found on any available comm port on the system. Make sure the ignition is plugged securely into the programming cable, and that the programming cable is plugged securely into the PC's serial port. Check that a good 9V battery is connected to the battery clip on the programming cable. If all of this is good, there may be another program that has control of the comm port, so that the CurveMaker software can not use it. Dynatek can not troubleshoot problems like this that are specific to your machine. If you do not know how to resolve these types of problems, you should take the computer to a person who can. To assist in determining what comm port the ignition is on, it has been set up to send text messages to standard terminal programs, like Hyperterminal which comes with Windows. The terminal program should be set up for 9600 baud 8-N-1 communications. When the ignition receives an “f” or “F” character, it will respond with the text message “DynaFS found”. This will allow you to find which port the ignition is on.

8) Additional Controls

Some DynaFS programmable modules will have additional wires that are designed to control auxiliary functions that are not supported on the stock ignition module. In order to use these additional functions, it may be necessary to add or modify wiring on the bike. Here is a list of the auxiliary output wires, note only certain programmable ignition modules will have these wires on them:

Brown- RPM Activated Switch. Used for Power Jet output signal on models with stock Power Jets. Controlled by the PJ controls for each curve. To activate the PJ, the brown wire is grounded internally. When the Power Jet is turned off, the brown wire is floating, and not connected to either 12V or ground. To wire a Power Jet using this control, use the following diagram. Maximum current 500mA.



Blue- RPM Activated Switch. Used for Power Valve Solenoid control signal on models with stock Power Valve solenoids. Controlled by the PV Solenoid controls for each curve. To activate the PV Solenoid, the blue wire is grounded internally. When the Power Valve Solenoid is turned off, the blue wire is floating, and not connected to either 12V or ground. To wire this output, use the diagram above. Maximum current 500mA.

Purple/White- (select models only)- used for the Parking Brake RPM limit on the stock box. When the parking brake is set, this limits the RPM to 2600. On selected models of DynaFS, this RPM value can be reprogrammed on the Config page, allowing this to function as a launch RPM limiter. When the purple/white wire is not connected, the engine functions normally. When the purple/white wire is grounded, the launch RPM limit is activated.

9) Helpful Hints

Always make sure to use the description field to describe what the ignition curve is. This is saved in the curve file, so you can remember what the curve is for later.

Plug the ignition into the download cable just before pressing the Send Curves button, or before calibrating the TPS. Unplug it after the curves sent successfully message appears, or after you have finished calibrating the TPS. Do not leave the ignition plugged in to the download cable for longer than necessary. Leaving it plugged in unnecessarily will shorten the life of the 9V battery used on the programming cable.

For TPS equipped bikes, saving a configuration in the config page for each bike will allow you to save your TPS settings so you do not have to readjust them each time.

To get the best results from a custom set of curves, you will need to spend some time on a dyno. Use the dyno to develop a curve that is making maximum power. Without a dyno, you will be unable to gauge accurately the true gains of the ignition, and where they are being made. But do not stop after the dyno work and assume it is done. A curve that looks really good on the dyno might be too radical on the track under a heavy load, and produce popping or detonation. After dyno testing, you need to spend some time at the track testing it and making sure there is no detonation. Also rider feedback is important. A timing curve that produces tons of power on the dyno may not be the sort of power delivery a rider likes. Some riders actually prefer a little less power in some areas if it results in a smoother power delivery. So pay attention to the riders feedback as well as the dyno, both are very important.

Once the ignition is programmed, print out a copy of the 4 curves that the ignition was programmed with for future reference.

Use the 4 curves that are supplied for each bike as a baseline for making adjustments. Start out with them, and modify them until you get what you are looking for. Use the show all curves setting on the config page so that you can see the curve you are modifying, as well as the other curves, so that you can make sure you are not making too radical of a change.